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General

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Risk Due To Background; What Is It? Who Cares? How Is It Used?
Presented at ER Project Technical Session
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ABSTRACT

Human health risks due to background concentration distributions of chemicals and radionuclides relative to risk management decisions is the subject of this paper. The regulatory context of including risk due to background in risk assessment results is discussed. Naturally-occurring vs. anthropogenic origin of chemicals and radionuclides in the background distributions, and use of the familiar 10^{-4} to 10^{-6} range when discussing risk are included. A characterization of potential human health risk due to background is presented using Laboratory-wide background soil data from Longmire, et. al. Risk due to background is presented by exposure scenario, exposure pathway, and by chemical/radionuclide. Approaches for incorporating risk due to background in risk management decisions are considered for 1) screening assessments, 2) risk assessments, 3) corrective measure study alternatives, and 4) clean-up level proposals.

RECOMMENDATIONS

1. Use the median and UTL as the statistics to represent the concentration term. Use of UTL alone will way overestimate the risk due to background. Use of the median provides risk managers with a good range.
2. Use all soil data to calculate risk. Screening can be done by strata, but risk should be predicated on all horizons. Receptor is not exposed to one horizon only. In fact, we make wacky assumptions about tuff and sediment by treating it as soil for most of our risk analyses to date.
3. Use appropriate land use scenario when calculating background risk.
4. Present risk due to background in all reports submitted to EPA, including NFA recommendations based on screening, site-specific risk assessment calculations, and clean-up level proposals.
5. Understand the utility of this type of risk characterization for risk management decisions. There is very limited utility when you consider that a receptor will never be exposed to all of the constituents at the UTL. May have some utility when using to evaluate one or two constituents only (as in the case of the arsenic example).